

177#53

Facility name:	<u>NL Industries / Tarnap Lead Site</u>		
Location:	<u>GRANITE CITY, IL (16<sup>th</sup> and Cleveland Blvds)</u>		
EPA Region:	<u>IV</u>		
Person(s) in charge of the facility:	<u>Michael O'Toole, U.S. EPA, (312) 886-3008</u> <u>IEPA Southern District (618) 345-4606</u>		
Name of Reviewer:	<u>MICHAEL O'TOOLE</u>	Date:	<u>March 27, 1984</u>
General description of the facility: (For example: landfill, surface impoundment, pile, container, types of hazardous substances; location of the facility, contamination route of major concern; types of information needed for rating; agency action, etc.)			
<p><u>The site is an inactive secondary lead smelting operation which takes lead bearing waste and reprocesses it into sheet lead, solder, shot, gun pellets, lead wool and lead ingots. The smelter property contains a three acre waste pile containing 200,000 tons of broken batteries, blast furnace and other lead waste. Soil samples collected near the waste pile revealed lead levels as</u></p> <p><u>as high as 30% (300,000 ppm)</u></p>			
<p>Scores: <math>S_M = 38.11</math> (<math>S_{gw} = 6.12</math> <math>S_{sw} = 5.82</math> <math>S_s = 65.38</math>)</p> <p><math>S_{FE} = 0</math></p> <p><math>S_{DC} = 50.0</math></p>			

FIGURE 1  
HRS COVER SHEET

QA  
Gregory A. Vogel  
6/21/84

Ground Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
<b>1</b> Observed Release	0 <u>45</u>	1	<u>45</u>	45	3.1	
If observed release is given a score of 45, proceed to line <b>4</b> . If observed release is given a score of 0, proceed to line <b>2</b> .						
<b>2</b> Route Characteristics					3.2	
Depth to Aquifer of Concern	0 1 2 3	2		6		
Net Precipitation	0 1 2 3	1		3		
Permeability of the Unsaturated Zone	0 1 2 3	1		3		
Physical State	0 1 2 3	1		3		
Total Route Characteristics Score				15		
<b>3</b> Containment	0 1 2 3	1		3	3.3	
<b>4</b> Waste Characteristics					3.4	
Toxicity/Persistence	0 3 6 9 12 15 <u>18</u>	1	<u>18</u>	18		
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 <u>8</u>	1	<u>8</u>	8		
Total Waste Characteristics Score			<u>26</u>	28		
<b>5</b> Targets					3.5	
Ground Water Use	0 <u>1</u> 2 3	3	<u>3</u>	9		
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	<u>0</u>	40		
Total Targets Score			<u>3</u>	49		
<b>6</b> If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>			<u>3510</u>	57,330		
<b>7</b> Divide line <b>6</b> by 57,330 and multiply by 100			$S_{gw} = 6.12$			

**FIGURE 2  
GROUND WATER ROUTE WORK SHEET**

$$45 \times 26 \times 3 = 3510$$

$$\frac{3510}{57330} \times 100 = 6.12 = S_{gw}$$

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Surface Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
<b>1</b> Observed Release	<u>0</u> 45	1	<u>0</u>	45	4.1	
If observed release is given a value of 45, proceed to line <b>4</b> . If observed release is given a value of 0, proceed to line <b>2</b> .						
<b>2</b> Route Characteristics					4.2	
Facility Slope and Intervening Terrain	<u>0</u> 1 2 3	1	<u>0</u>	3		
1-yr. 24-hr. Rainfall	0 1 <u>2</u> 3	1	<u>2</u>	3		
Distance to Nearest Surface Water	0 1 <u>2</u> 3	2	<u>4</u>	6		
Physical State	0 1 <u>2</u> 3	1	<u>2</u>	3		
Total Route Characteristics Score			<u>8</u>	15		
<b>3</b> Containment	0 1 2 <u>3</u>	1	<u>3</u>	3	4.3	
<b>4</b> Waste Characteristics					4.4	
Toxicity/Persistence	0 3 6 9 12 15 <u>18</u>	1	<u>18</u>	18		
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 <u>8</u>	1	<u>8</u>	8		
Total Waste Characteristics Score			<u>26</u>	26		
<b>5</b> Targets					4.5	
Surface Water Use	0 1 <u>2</u> 3	3	<u>6</u>	9		
Distance to a Sensitive Environment	<u>0</u> 1 2 3	2	<u>0</u>	6		
Population Served/Distance to Water Intake Downstream	<u>0</u> 4 6 8 10 12 16 18 20 24 30 32 35 40	1	<u>0</u>	40		
Total Targets Score			<u>6</u>	55		
<b>6</b> If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>			<u>3744</u>	64,350		
<b>7</b> Divide line <b>6</b> by 64,350 and multiply by 100			$S_{sw} = 5.82$			

**FIGURE 7  
SURFACE WATER ROUTE WORK SHEET**

$$0 \times 3 \times 26 \times 6 = 3744$$

$$\frac{3744}{64350} \times 100 = 5.82 = S_{sw}$$

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Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
<b>1</b> Observed Release	0 <u>45</u>	1	45	45	5.1
Date and Location:					
Sampling Protocol:					
If line <b>1</b> is 0, the $S_a = 0$ . Enter on line <b>5</b> . If line <b>1</b> is 45, then proceed to line <b>2</b> .					
<b>2</b> Waste Characteristics					5.2
Reactivity and Incompatibility	<u>0</u> 1 2 3	1	0	3	
Toxicity	0 1 2 <u>3</u>	3	9	9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 <u>8</u>	1	8	8	
Total Waste Characteristics Score			17	20	
<b>3</b> Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 <u>27</u> 30	1	27	30	
Distance to Sensitive Environment	<u>0</u> 1 2 3	2	0	6	
Land Use	0 1 2 <u>3</u>	1	3	3	
Total Targets Score			30	39	
<b>4</b> Multiply <b>1</b> x <b>2</b> x <b>3</b>			22950	35,100	
<b>5</b> Divide line <b>4</b> by 35,100 and multiply by 100			$S_a = 65.38$		

**FIGURE 9  
AIR ROUTE WORK SHEET**

$$45 \times 17 \times 30 = 22950$$

$$\frac{22950}{35,100} \times 100 = 65.38$$

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	s	s <sup>2</sup>
Groundwater Route Score (S <sub>gw</sub> )	6.12	37.45
Surface Water Route Score (S <sub>sw</sub> )	5.82	33.87
Air Route Score (S <sub>a</sub> )	65.38	4274.54
$s_{gw}^2 + s_{sw}^2 + s_a^2$		4345.86
$\sqrt{s_{gw}^2 + s_{sw}^2 + s_a^2}$		65.92
$\sqrt{s_{gw}^2 + s_{sw}^2 + s_a^2} / 1.73 = S_M =$		38.11

FIGURE 10  
WORKSHEET FOR COMPUTING S<sub>M</sub>

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*Not documented as a hazard by fire marshall*

Fire and Explosion Work Sheet									
Rating Factor	Assigned Value (Circle One)		Multi- plier	Score	Max. Score	Ref. (Section)			
<b>1</b> Containment	1	3	1		3	7.1			
<b>2</b> Waste Characteristics						7.2			
Direct Evidence	0	3	1		3				
Ignitability	0	1 2 3	1		3				
Reactivity	0	1 2 3	1		3				
Incompatibility	0	1 2 3	1		3				
Hazardous Waste Quantity	0	1 2 3 4 5 6 7 8	1		8				
Total Waste Characteristics Score					20				
<b>3</b> Targets						7.3			
Distance to Nearest Population	0	1 2 3 4 5	1		5				
Distance to Nearest Building	0	1 2 3	1		3				
Distance to Sensitive Environment	0	1 2 3	1		3				
Land Use	0	1 2 3	1		3				
Population Within 2-Mile Radius	0	1 2 3 4 5	1		5				
Buildings Within 2-Mile Radius	0	1 2 3 4 5	1		5				
Total Targets Score					24				
<b>4</b> Multiply <b>1</b> x <b>2</b> x <b>3</b>					1,440				
<b>5</b> Divide line <b>4</b> by 1,440 and multiply by 100						SFE =			

FIGURE 11  
FIRE AND EXPLOSION WORK SHEET

*SW*  
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Direct Contact Work Sheet						
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)	
<b>1</b> Observed Incident	<b>0</b> 45	1	<b>0</b>	45	8.1	
If line <b>1</b> is 45, proceed to line <b>4</b> If line <b>1</b> is 0, proceed to line <b>2</b>						
<b>2</b> Accessibility	0 1 2 <b>3</b> No Barriers	1	<b>3</b>	3	8.2	
<b>3</b> Containment	0 <b>15</b> Uncovered Waste Pile	1	<b>15</b>	15	8.3	
<b>4</b> Waste Characteristics Toxicity	0 1 2 <b>3</b> Lead	5	<b>15</b>	15	8.4	
<b>5</b> Targets	POP 7147				8.5	
Population Within a 1-Mile Radius	0 1 2 3 <b>4</b> 5	4	<b>16</b>	20		
Distance to a Critical Habitat	<b>0</b> 1 2 3	4	<b>0</b>	12		
Total Targets Score					32	
<b>6</b> If line <b>1</b> is 45, multiply <b>1</b> x <b>4</b> x <b>5</b> If line <b>1</b> is 0, multiply <b>2</b> x <b>3</b> x <b>4</b> x <b>5</b>			10,800	21,600		
<b>7</b> Divide line <b>6</b> by 21,600 and multiply by 100			SDC = <b>50.0</b>			

**FIGURE 12  
DIRECT CONTACT WORK SHEET**

$$3 \times 15 \times 15 \times 16 = 10800$$

$$\frac{10800}{21600} \times 100 = 50.0$$

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DOCUMENTATION RECORDS  
FOR  
HAZARD RANKING SYSTEM

**INSTRUCTIONS:** The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: N/L Industries / Taracorp Lead Site

LOCATION: 16<sup>th</sup> Cleveland Bldg, Granite City, IL

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## GROUND WATER ROUTE

### 1 OBSERVED RELEASE

Contaminants detected (5 maximum):

*Lead*

Rationale for attributing the contaminants to the facility:

*Site was an operating secondary Lead smelter. November 1982, Groundwater sampling of 4 wells. Revealed lead contamination in well G104 at 60 ppb (down gradient) G101 up gradient of Texcorp facility - lead concentration below detection limit of 5 ppb. Ref #1 pg 22  
IEPA installed eight additional wells - July 1983. wells sampled in 8/83 and 10/83. one down gradient well 17 ppb lead - Ref #2*

### 2 ROUTE CHARACTERISTICS

#### Depth to Aquifer of Concern

Name/description of aquifers(s) of concern:

### OBSERVED RELEASE

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

Depth from the ground surface to the lowest point of waste disposal/storage:

*BV*  
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Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

Mean annual lake or seasonal evaporation (list months for seasonal):

Net precipitation (subtract the above figures):

OBSERVED RELEASE

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Permeability associated with soil type:

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

\* \* \*

*MV*  
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### 3 CONTAINMENT

#### Containment

Method(s) of waste or leachate containment evaluated:

OBSERVED RELEASE

Method with highest score:

### 4 WASTE CHARACTERISTICS

#### Toxicity and Persistence

Compound(s) evaluated:

lead: Pb	<u>Toxicity</u> <sup>①</sup>	<u>Persistence</u> <sup>②</sup>
	3	3

① Ref # 3

② Ref # 4

Compound with highest score:

lead: Pb Total Score: 18

#### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

D008: lead waste

Waste Plc: 171,422 yd<sup>3</sup>

from HRS 1 ton = 1 yd<sup>3</sup> ∴ 171,422 tons ≈ 2500 ton so Score: 8  
Basis of estimating and/or computing waste quantity:

U.S. EPA Form 3570-1 (6-80) RCRA Part A application for  
Interim Status received November 18, 1980 from TransCorp (Ref #5)

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NV  
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## 5 TARGETS

### Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Commercial/Industrial. However Mississippi River is available  
as an alternate drinking water source Ref. 1. pg 22

Score: 1

### Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

None Ref #1 pg 22

Distance to above well or building:

N/A

### Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

None Ref #6 pg 44, 45; 60; 63; 65; 52

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

None.

Ref

Total population served by ground water within a 3-mile radius:

0 score: 0

Matrix Score: 0

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## SURFACE WATER ROUTE

### 1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (if maximum):

*None*

Rationale for attributing the contaminants to the facility:

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### 2 ROUTE CHARACTERISTICS

#### Facility Slope and Intervening Terrain

Average slope of facility in percent:

< 1% Source: U.S.G.S. Granite City Quadrangle IL-MO  
7.5 minute series 1954 photorevised 1968 and 74

Score: 0

Ref 7

Name/description of nearest downslope surface water:

Horseshoe Lake -  $\approx 12000$  feet south east of site

Mississippi River  $\approx 12000$  feet west of site Ref 7

Average slope of terrain between facility and above-cited surface water body in percent:

$\frac{420' - 400'}{12000} \times 100 = .16\%$  Granite City, IL-MO Quad Ref 7

Score: 0

Total Matrix Score: 0

Is the facility located either totally or partially in surface water?

No!

Ref 7

Is the facility completely surrounded by areas of higher elevation?

No Ref 7

1-Year 24-Hour Rainfall in Inches

3" Source: National Contingency Plan 40CFR Part 300 Appendix A Figure 8  
(Ref #4)

Score: 2

Distance to Nearest Downslope Surface Water

Surficial soil samples containing 500ppm Pb are approximately  
500 feet from Mississippi River (Ref #7) (Ref #1)

Source: Granite City, IL - Mo Quad - pg 18 IEM's April 1983 "Study of

Physical State of Waste

Lead .... Illinois" Score: 2

Dust pg 19-20 "Study of Lead .... Illinois" by IEPA April 1983  
(Ref #1)

Score: 2

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### 3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Waste pile not covered; wastes unconsolidated and no diversion

Source: pg 25 IEPA's April 1983 "Study of Lead .... Illinois" (Ref #1)

U.S. EPA File - site photograph. January 20, 1983 (Ref #2)

Method with highest score:

Score: 3

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#### 4 WASTE CHARACTERISTICS

##### Toxicity and Persistence

Compound(s) evaluated

See G.W. Route

Compound with highest score:

See G.W. Route Total Score: 18

##### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

See G.W. Route Score: 8

Basis of estimating and/or computing waste quantity:

See G.W. Route

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#### 5 TARGETS

##### Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Mississippi River -

Ref 7

Horseshoe Lake

Recreation Score: 2

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Is there tidal influence?

N/A

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

N/A

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

None Ref # 7

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None Ref # 9 pages 46; 48; 61 and 62

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

Water Intake for East St. Louis, Granite City,  
Madison, Illinois (Ref. #10)  
is located at approximately 180.8 River Mile (Mississippi)  
approximately 4.2 river miles from site.

Matrix Score: 0

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Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

N/A

Total population served:

N/A

Name/description of nearest of above water bodies:

Mississippi River & Horseshoe Lake

Distance to above-cited intakes, measured in stream miles.

4.2 stream miles (Ref #10 & 7)

Metric Score: 0

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## AIR ROUTE

### 1 OBSERVED RELEASE

Contaminants detected:

Lead (Pb) Score: 45

Date and location of detection of contaminants: Quarterly Ambient Lead Averages based on individual 24 hour samples taken every six days for four monitoring locations near the smelter (dates 1978-1983). (Ref #11 pg 11 & 12)

Also same data for third & fourth quarter 83 & first quarter 1984. Ref #12

1<sup>st</sup> Quarter 1984 Monitor at 15<sup>th</sup> & Madison (closest to pile approximately 1000')

Methods used to detect the contaminants:

revealed 1.53 ug/m<sup>3</sup> Pb while monitor furthest from site (550') was found to have .3 ug/m<sup>3</sup> Pb.

Rationale for attributing the contaminants to the site:

The blast furnaces at Tanco site have not been operating since February 1983 (REF # 13). The St. Louis Lead Recyclers, a lead recycler who operates adjacent to Tanco Facility has not been operating since March/April 1986 (Ref # 13). Therefore, the only sources of lead being monitored in 1984 were fugitive which includes the waste pile. Also, the State Implementation Plan (Ref # 11 pages 64) confirms that waste pile contributes to elevated lead levels at the monitoring station at 15<sup>th</sup> & Madison.

### 2 WASTE CHARACTERISTICS

#### Reactivity and Incompatibility

Most reactive compound:

Pb: Lead

Score 0

Ref # 3

Most incompatible pair of compounds:

N/A only one contaminant lead.

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Toxicity

Most toxic compound:

Pb Score: 3

See G.W. Route

Hazardous Waste Quantity

Total quantity of hazardous waste:

See G.W. Route

Score: 8

Basis of estimating and/or computing waste quantity:

See G.W. Route

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3 TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

Contamination is approximately 1/2 mile from site.

0 to 4 mi	0 to 1 mi	0 to 1/2 mi	0 to 1/4 mi
100% N.V. 1600	5/8 M 3496	1/3 M 1971	
100% M 5915	3/32 GC 3451	3/32 GC 2300	
3/32 G.C. 8053	7147	4271	
TOTAL 15568			
Score: 24	24	27	

Highest Score:  
27

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

N/A

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

NONE

\* N.V. - North Venice 1600  
M : Madison 5915  
G.C. : Granite City 36,815

Source: 1980 Census and (Ref #15)  
Granite City IL-MO Quad (Ref #7)  
Monks Mound IL Quad (Ref #14)

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Distance to critical habitat of an endangered species, if 1 mile or less:

None Ref # 9 pages 46, 48, 61 and 62

Land Use

Distance to commercial/industrial area, if 1 mile or less:

< 1/4 mile Source: Granite City, IL Mo. Qual (Ref # 7)

Score: 3

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

> 2 mile Source: Ref # 7

Score: 0

Distance to residential area, if 2 miles or less:

< 1/4 mile Source: Ref # 7

Score: 3

Distance to agricultural land in production within past 5 years, if 1 mile or less:

None Ref # 7

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

None Ref # 7

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

N/A

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## Reference List

- ① Study of Lead Pollution in Granite City, Madison and Venice, Illinois  
April 1983.
- ② Telephone memo from Michael O'Toole to Bob Carles EPA on June 14, 1984
- ③ Sax N. I., Dangerous Properties of Industrial Material 5<sup>th</sup> Edition 1979
- ④ National Contingency Plan (40 CFR Part 300 Appendix A)
- ⑤ U.S. EPA Form 3510-1 (6-80) RERA Part A application for Interim Status  
November 18, 1980.
- ⑥ State of Illinois Environmental Protection Agency Division of Land Pollution  
Control; GROUNDWATER WITHDRAWALS FROM AQUIFERS IN ILLINOIS  
WITH EMPHASIS on Public Water Supply Wells 1981.
- ⑦ U.S.G.S. Granite City Quadrangle 14-Mo 7.5 minute Series 1954 photo  
revised 1968 and 1974
- ⑧ U.S. EPA file site photographs taken January 29, 1983.
- ⑨ Endangered and Threatened Species of Illinois Status and Distribution  
January 1981
- ⑩ AMERICAN WATER COMPANY East St. Louis (618) 874-2557  
Memo from Fred Eastman to American Water Company
- ⑪ State Implementation Plan for the State of Illinois Lead (Granite City)  
September 1983.
- ⑫ Memo to file from Michael O'Toole - concerning air sample results  
for 3<sup>rd</sup> & 4<sup>th</sup> Quarter 83 & 1<sup>st</sup> Quarter 1984 - 6/15/84

(13) Phone conversation between Bob Sharpe, IEPA and  
Mike O'Toole 6/15/84

(14) U.S.G.S. Montis Mound Quadrangle, IL 7.5 Minute Series 1954/

(15) 1980 Census of Population and Housing Illinois Part 15 (PHC 80-3-1)  
U.S. Department of Commerce Bureau of Census